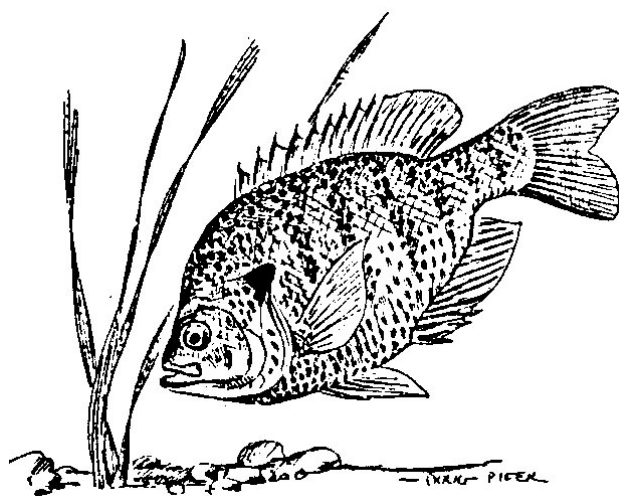


OLD HOLLAND CITY LAKE

2004 Fish Management Report

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INTRODUCTION

Old Holland City Lake is a 14-acre impoundment constructed in 1942 as a water supply for the City of Holland. The lake is located in a city park along with a swimming beach, restrooms, baseball fields, and tennis courts. Boat access is provided by a concrete boat ramp and some of the shoreline is accessible to bank fishing. A \$15.00 annual city boat launching permit is required to use the boat ramp. The launching fee is \$10.00 for residents of Holland. The launching permit also includes boat access to New Holland City Lake.

Fisheries surveys were conducted at Old Holland City Lake in 1966, 1977, 1981, 1988, 1990, 1991, 1994, 1997, and 2001. Other fish management activities consisted of channel catfish stockings in 1980, 1985, and 1989. Bluegill and redear sunfish fingerlings were supplementally stocked in 1990 due to a fish kill in January 1990. Also, a 14-inch largemouth bass minimum length limit was enacted in 1984. A combined total of 212 largemouth bass were removed from the lake in 1998 and 1999 as per a 1997 fish management report recommendation. The 84 bass removed in 1998 were transported to Driftwood State Fish Hatchery to supplement the states bass broodstock supply. The bass removed in 1999 were stocked into Hornady Park Pond.

Fisheries surveys in 1990, 1991, 1994, and 1997 all indicated that there was a predator/prey imbalance. Largemouth bass dominated the fishery by number and weight since 1990, which negatively impacted bluegill and redear sunfish recruitment. In 2001 the fish population showed some improvements due to the bass removal. Largemouth bass growth rates improved for the first time since 1988 and bluegill dominated the fishery by number.

The current survey was conducted on June 7 and 8, 2004 to monitor largemouth bass and bluegill growth and relative abundance. An aquatic vegetation survey was conducted on August 5.

Temperature and dissolved oxygen profiles, turbidity, alkalinity, conductivity, and pH data were collected as per standard lake survey procedures. Fish collection effort consisted of two gill net lifts, two trap net lifts, and 0.25 hour of pulsed D.C. night electrofishing. Two individuals collected fish stunned by the electrofishing boat. The aquatic vegetation survey was conducted as described by Pearson 2004.

RESULTS

Water chemistry data were standard for a southwest Indiana lake. Oxygen was sufficient for fish survival to a depth of 6 feet. Turbidity was high as indicated by a secchi disk

reading of 1.5 feet during the fish management survey and 2.5 feet during the vegetation survey.

Twenty sites were sampled during the vegetation survey. Out of 18 littoral sampling sites, 17 contained some amount of submersed aquatic vegetation. Abundance of submersed aquatic plants was low as indicated by a mean rake score of 1.5. Slender naiad, curly-leaf pondweed, and Eurasian watermilfoil were the only submersed plants collected. Slender naiad was the dominant species present. Filamentous algae was present at one third of the littoral sampling sites. Other species observed during the survey included creeping water primrose, bulrush, duckweed, and common cattail.

A total of 322 fish representing five species was collected that weighed 114.78 pounds. Bluegill was most abundant by number, followed by redear sunfish, and largemouth bass. Other species sampled were white crappie and yellow bullhead.

A total of 126 bluegill was sampled that weighed 25.90 pounds. They ranged in length from 1.4 to 8.4 inches. Bluegill relative abundance was 39% by number and 22% by weight. The bluegill electrofishing catch rate has nearly tripled since 2001 from 106.0 to 300.0 per hour. Electrofishing catch rates in 1994 and 1997 were 165.3 and 260.0 per hour. The gill net catch rate increased from 1.5 in 2001 to 3.5 per lift. The trap net catch rate decreased from 79.0 in 2001 to 22.0 per lift. Bluegill growth was average for ages 1 and 2 and above the district average for ages 3 and 4.

The bluegill PSD was 60, which was an increase from the 2001 PSD index value of 39. The suggested range of bluegill PSD indicating a balanced fishery is 20 to 60 (Anderson and Neumann 1996). The bluegill RSD7 was 33 and RSD8 was 6. In 2001, the bluegill RSD7 and RSD8 were 27 and 2.

The bluegill fishing potential (BGFP) index classified the lake as having "excellent" bluegill fishing with an index rating of 26 (Ball and Tousignant 1996). In 2001 the BGFP index rated the lake as having "fair" bluegill fishing with an index rating of 18.

One-hundred-and-eight redear sunfish were sampled that weighed 40.14 pounds. They ranged in length from 4.7 to 10.6 inches. Their relative abundance was 34% by number and 35% by weight. The electrofishing catch rate was 168.0 per hour, which was a substantial increase from 28.0 per hour in 2001. Previous electrofishing catch rates were 122.1 (1994) and 45.0 per hour (1997). The trap net catch rate increased from 3.0 in 2001 to 32.0 per lift. Growth increased by nearly 1 inch for ages 2 and 3 redear from 2001 results and is within the district average.

A total of 84 largemouth bass was sampled that weighed 45.41 pounds. They ranged in length from 5.4 to 16.0 inches. Relative abundance of largemouth bass was 26% by number and 40% by weight. The bass electrofishing catch rate nearly doubled from 2001 to 300.0 per hour. Electrofishing catch rates in 1994 and 1997 were 210.5 and 359.0 per hour. The gill net

and trap net catch rate was 3.0 per lift and 1.5 per lift. Gill net and trap net catch rates have seen little variation between 2001 and 2004. Growth was similar to 2001 results and was average for all ages when compared to the district averages.

The bass PSD index value (16) is far below the desired range for a balanced fishery. The suggested range of largemouth bass PSD indicating a balanced fishery is 40 to 70 (Anderson and Neumann 1996). The largemouth bass RSD14 has increased from 4 in 2001 to 7.

Other species collected include three white crappie and one yellow bullhead. The white crappie ranged in length from 12.3 to 13.5 inches.

CONCLUSIONS AND RECOMMENDATIONS

Old Holland City Lake provides excellent fishing for bluegill and redear sunfish. Bluegill were collected up to 8.4 inches and redear up to 10.6 inches in length. Bass fishing should be fast, but most of the bass are going to be 10 to 12 inches long.

The panfish population has seen many improvements due to the bass removal in 1998 and 1999. Decreased predation on bluegill allowed for a strong 2001 year class (age 3) which are now reaching 7.4 inches (Figure 1). Bluegill PSD, RSD7, and RSD8 have all increased since the last survey indicating the population has shifted towards larger individuals. Electrofishing catch rates for bluegill tripled and redear catch rates increased by six times since 2001. Both species showed improvements in growth.

Largemouth bass continue to be outnumbered by bluegill and the bass population has improved for those larger than 14 inches. However, the electrofishing catch rate of 300 per hour, the low PSD, and the high relative abundance of age 3 bass cause concerns. High electrofishing catch rates are an indication that the bass population may be on the verge of stock piling. Largemouth bass have stockpiled at Old Holland City Lake in the past.

A normal bass population contains more 1 and 2 year old bass than 3 year olds. At Old Holland City Lake, there are more than twice as many 3 year olds (54% of the collected bass) than 1 and 2 year olds combined (24% of the collected bass). The bass length frequency indicates that the 2001 year class (age 3 bass) is the main contributor to the high electrofishing CPUE and the low PSD (Figure 2). The 2001 year class ranged in length from 9.8 to 11.3 inches, which may be suppressing the PSD. Even with the high abundance of 3 year olds, growth for that year class has not yet been affected (Figure 3). If current growth rates continue, the PSD should substantially increase as the year class ages.

There is still a possibility that bass growth could slow and the bass population become stunted. The fishery should be resurveyed in 2006 to monitor the largemouth bass population. The 2006 survey will determine if another bass removal is necessary.

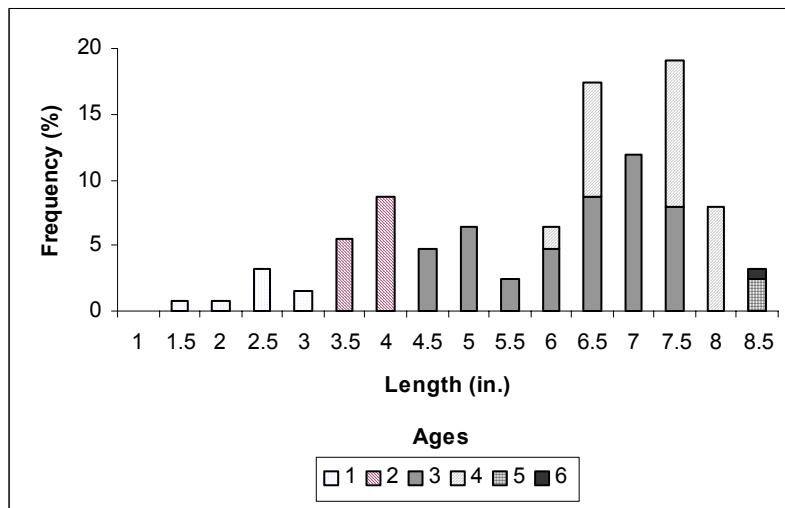


Figure 1. 2004 bluegill length frequency.

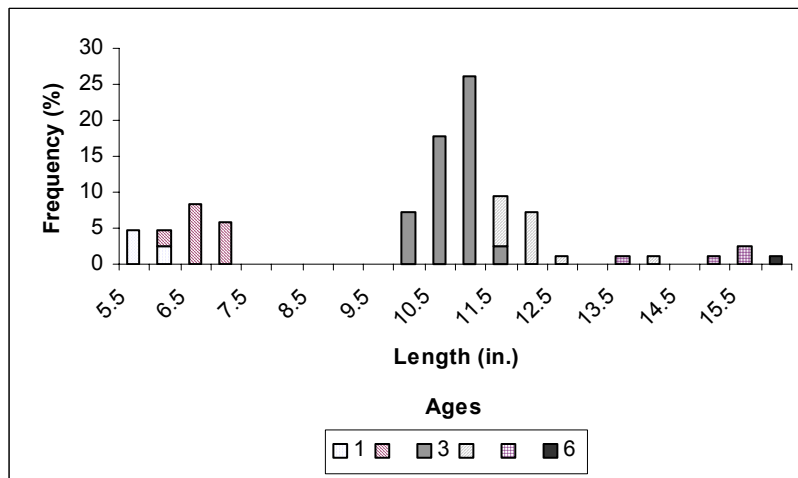


Figure 2. 2004 largemouth bass length frequency.

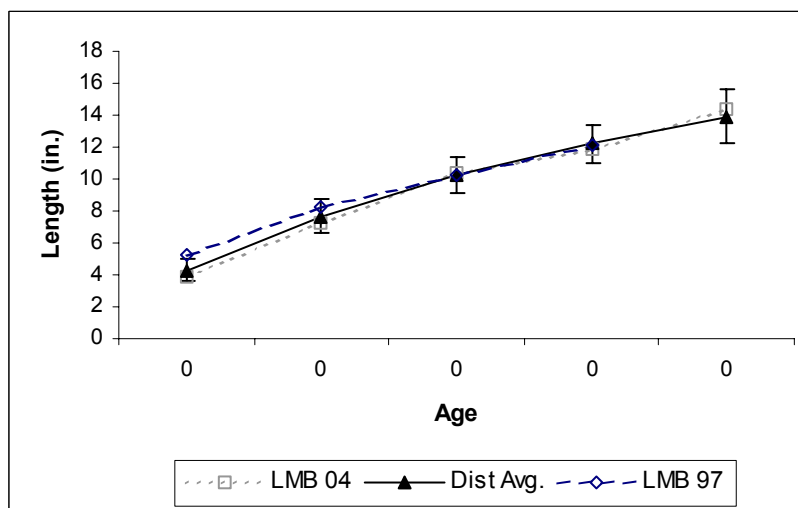


Figure 3. Largemouth bass back-calculated lengths 1997, 2004, and district average.

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